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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TAYONG, HELENE E

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/775,380	Applicant(s) FISHMAN, ILYA M.	
	Examiner HELENE TAYONG	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/13/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 8, 9 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 4-7 and 10-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment filed on 2/13/08.

Claims 1-18 are presently pending and stand rejected. Claims 1-18 are pending in this application and have been considered below.

Response to Arguments

2. Applicant's arguments with respect to claim 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Primas et al (US 5031234) in view of Jones et al (US 20040019443).

(1) With regards to claims 1, 2, 8 and 9;

Primas et al discloses in (figs. 2, 3) a method of phase conjugated vectoring (PCV) (18) of transmission signals propagating via fiber optic cable (col.5, lines 3-67) comprising the steps of:

Propagating a reference signal (reference frequency) from a receiver site (14) via (fiber optic cable) for obtaining a wavefront of PCV reference signal at a transmitter site (fig. 2, 14, 10 and 16).

establishing PCV antenna (virtual antenna) bundle for (fiber optic cable) (fig. 3, and col. 5, lines 31-67).

scaling input transmission signals by said PCV reference signal for obtaining mutually coherent PCV transmission signals (see abstract, col.6, lines 1-35) ; and

propagating said mutually coherent PCV transmission signals via said PCV antenna (virtual) bundles for receiving only one signal in a corresponding (fiber optic cable) at the receiver site (col. 6, lines 27-35).

Primas et al discloses all of the subject matter discussed above, but for specifically teaching a plurality of twisted pairs of a telephone cable between the devices.

However, Jones et al discloses in (fig. 2) discloses a hybrid (204) that connects to channel 208. This channel 208 comprises a twisted pair connector (page 5, [0066]). In other embodiment, the conductor comprises fiber optic cable. In yet another embodiment, the channel may comprise coaxial cable or radio waveguide.

It would have been obvious to one of ordinary skilled in the art at the time of the invention to have utilized the device of Jones et al in the system of Primas et al in order for sequence time domain reflectometry. The benefit being to lower power (page 1, [0007]).

(2) With regards to claim 3;

Primas et al discloses PCV reference signals (fig.2 and 3, col. 5, lines 3-29).

Primas et al discloses all of subject matter as described above except for specifically teaching twisted pairs carrying said PCV reference signals above a predetermined power level defined by crosstalk tolerance.

However, Jones et al discloses in (fig. 2) discloses a hybrid (204) that connects to channel 208. This channel 208 comprises a twisted pair connector (page 5, [0066]). In other embodiment, the conductor comprises fiber optic cable. In yet another embodiment, the channel may comprise coaxial cable or radio waveguide.

It would have been obvious to one of ordinary skilled in the art at the time of the invention to have utilized the device of Jones et al in the system of Primas et al in order for sequence time domain reflectometry. The benefit being to lower power (page 1, [0007]).

4. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi et al (US 6965649 B1) in view of Cioffi (US 5887032).

(1) With regards to claim 13;

Miyoshi et al discloses a system (fig. 1A and 1B), reference clock signal generating unit (1) , an encoder (20), Inverse Fourier Transform unit (IFFT)(30), a FFT (130) Parallel-to-serial converter (P/S) (10, 40, 120,150) of crosstalk free transmission of signals via a plurality of twisted pairs of a telephone cable between a transmitter (central office, col. 8, lines 52-67 and col. 9, lines 1-6) and a receiver sites(remote terminal col. 9, lines 7-18), comprising:

Miyoshi et al discloses all of the subject matter disclosed above except for specifically teaching;

a combining units for collecting signals from a respective PCV antenna bundle;

a processing unit coupled with each said combining unit for providing parameters for the PCV antenna bundles for each said twisted pair; and

a PCV components bank coupled to said processing unit for storing parameters of each said PCV antenna, wherein the crosstalk free transmission is provided by scaling input signals to corresponding reversed reference signals and applying scaled signals to the respective PCV antenna bundles.

a crosstalk cancellation unit

However, Coiffi in the same field of endeavor, teaches combining units for collecting signals from a respective PCV antenna bundle (fig. 4, 402);

a processing unit (fig. 3, 302) coupled with each said combining unit for providing parameters for the PCV antenna bundles for each said twisted pair; and

a PCV components bank (fig. 4, 408) coupled to said processing unit for storing parameters of each said PCV antenna, wherein the crosstalk free transmission is provided by scaling input signals to corresponding reversed reference signals and applying scaled signals to the respective PCV antenna bundles (col. 11, lines 18-25).

a crosstalk cancellation unit (fig. 4, 412).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the components of Coiffi to the system of Miyoshi et al in order to reduce the processing needed to implement NEXT cancellers. The

motivation to combine Coiffi's method to Miyoshi et al system would be to provide improved technique to mitigate crosstalk interference (col. 9, lines (30-31)

(2) With regards to claim 14;

Miyoshi et al further discloses a buffer/encoder (20) for encoding a transmission input data (col.8, lines 59-61), IFFT unit connected (30) to said buffer/encoder via said combining unit for obtaining Fourier transformed analog data (col.8, lines 63-65); and parallel-to-serial converter (40) connected to said IFFT unit for conversion of analog data into a waveform transmitted in the respective twisted pair(col.8, lines 66-67).

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi et al (US 6965649 B1) in view of Cioffi (US 5887032) as applied in claim 14 above, and further in view of Amrany et al (US 6999504 B1).

(1) With regards to claim 15;

Miyoshi et al as modified by Cioffi further discloses all of the subject matter disclose above, but does not teach transmission input data is propagated from the transmitter site to the receiver site.

However, Amrany in the same field of endeavor, teaches wherein the transmission input data is propagated from the transmitter site to the receiver site (fig. 2A, col. 6, lines 38-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Amrany to the system of Miyoshi et al

as modified by Cioffi in order to approximate the transmitted signal. The motivation to implement Amrany's method was to provide more accurate computation results.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi et al (US 6965649 B1) in view of Cioffi (US 5887032) as applied in claim 13 above, and further in view of Sands et al (US 6134283).

(1) With regards to claim 16;

Miyoshi et al as modified by Cioffi discloses all of the subject matter discussed above, except for specifically teaching a second buffer/encoders for encoding a transmission input data.

However, Sands et al in the same endeavor teaches second buffer/encoders for encoding a transmission input data (fig. 11, 1128, 1106).

It would have been obvious to one of ordinary skill at the time the invention was made to integrate the encoder of Sands et al. to the system of Miyoshi et al as modified by Cioffi in order to improve synchronization techniques utilizing crosstalk interference levels. The motivation to integrate Sands et al's device to Miyoshi et al as modified Cioffi's system improve data transmission.

7. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyoshi et al, Cioffi (US 5887032) and Sands et al as applied to claim 16 and further in view of Amrany et al (US 6999504 B1).

(1) with regards to claim 17;

Miyoshi et al, Cioffi, Sands discloses all of the subject matter disclosed above, but does not teach transmission input data is propagated from the transmitter site to the receiver site.

However, Amrany in the same field of endeavor, teaches wherein the transmission input data is propagated from the transmitter site to the receiver site (fig. 2A, col. 6, lines 38-44).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Amrany to the system of Miyoshi et al, Cioffi and Sands in order to approximate the transmitted signal. The motivation to implement Amrany's method was to provide more accurate computation results.

(2) With regards to claim 18;

Miyoshi et al further discloses transmission input data is propagated from the receiver site to the transmitter site (col. 9, lines 21-26).

Allowable Subject Matter

8. Claims 4, 5-7 and 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: The Prior art of record Primas et al (US 5031234) discloses fiber optic frequency transfer link, Shah et al (US 20060109779) discloses method and system for

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split-pair reception in twisted-pair communications and Cioffi (US 20050152385 A1) discloses high speed multiple loop DSL system. All of these references do not teach wherein the propagation time of said reference signal exceeds a shortest wavelength period in any said twisted pair and wherein the propagation time of said reference signal does not exceed a shortest wavelength period.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lui (US 2004/0096052 A1) discloses a method for frequency and loop length grouping for cross-talk reduction in a plurality of DSL channels.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELENE TAYONG whose telephone number is (571)270-1675. The examiner can normally be reached on Monday-Friday 8:00 am to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helene Tayong/
Examiner, Art Unit 2611

April 28, 2008
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611